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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/760,961	01/20/2004	Glenn W. Skala	8540G-000107	1476

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EXAMINER	
RUTHKOSKY, MARK	

ART UNIT	PAPER NUMBER
1795	

MAIL DATE	DELIVERY MODE
05/01/2008	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/760,961	SKALA, GLENN W.	
	Examiner	Art Unit	
	Mark Ruthkosky	1795	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *04 February 2008*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-11* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-11* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Continued Examination Under 37 CFR 1.114

A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 2/4/2008 has been entered.

Claim Rejections - 35 USC § 102

The rejection of claims 1-2 and 5-8 under 35 U.S.C. 102(e) as being anticipated by Luken et al. (US 6,534,210.) has been overcome by applicant's amendment to the claims.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

Claims 1-11 are rejected under 35 U.S.C. 103(a) as being unpatentable over Luken et al. (US 6,534,210), in view of Van Dine (US 6,514,635.)

The instant claims are to a method of fuel cell start-up for a fuel cell system. Luken et al. (US 6,534,210) teaches a method comprising the steps of introducing hydrogen to the anode inlet

of the fuel cell stack; applying an electrical load to the fuel cell stack via the compressor for supplying additional oxygen to the cathode inlet; gradually increasing the electrical load to the fuel stack over time while using the increased electrical load to drive the compressor to supply additional oxygen to the cathode inlet. The fuel cell includes a hydrogen source connected to an anode inlet of a fuel cell stack and an oxygen source connected to a cathode inlet of the fuel cell stack, with the cathode inlet being connected to a compressor (claims 1-19.) A controller opens a valve to flow hydrogen to the anode of the fuel cell (col. 7, lines 30-end.) Ambient air is used as the oxidant (claim 6.) A stored amount of oxygen is released from the compressor following the introduction of hydrogen. Further, stored oxygen in the ambient fuel cell is used at the cathode. The reference teaches gradually increasing the electrical load to the fuel stack over time while using the increased electrical load to drive the compressor (col. 7, lines 55-end.) The step of gradually increasing the electrical load to the fuel cell stack may be performed on an open loop basis according to a timed schedule (see at least col. 8, claims 8-19 and col. 3, lines 1-52.)

Luken does not teach the step of purging hydrogen from the fuel cell stack with air prior to startup. Van Dine teaches a method of shutting down a fuel cell. A final air purge assures that even the smallest amounts of hydrogen are flushed from the cell, and that the anode and cathode flow field gasses remaining in the cell after shut-down are essentially identical (i.e. 100% air, claim 19, p. 22.) It would have been obvious to one of ordinary skill in the art at the time the invention was made to purge a fuel cell prior to start-up, such as at shut-down as taught by Van Dine in order to remove reactive hydrogen from the fuel cell and assure that the anode and cathode flow field gasses remaining in the cell after shut-down are essentially identical.

Luken et al. (US 6,534,210) teaches a method, as previously noted. With regard to claims 3-4, Luken et al. (US 6,534,210) is silent to the means for opening the hydrogen release valve. The valve is taught to be open by a controller. It would have been obvious to one of ordinary skill in the art at the time the invention was made to open the valve manually or with an electronic solenoid as these means are well known in the art for opening valves. During start-up an operator would be motivated to open the valve based on the teachings of Luken et al. Opening by a manual switch would be obvious to a skilled person in the art to open a valve. Further, as the fuel cell supplies electricity to the fuel cell subsystems upon start-up, it would be obvious to one of ordinary skill in the art to use the electricity taught by Luken to open an electrically powered valve.

With regard to claims 9-10, Luken et al. (US 6,534,210) is does not teach the step of releasing a pressurized gas into a passage upstream of the cathode inlet for forcing oxygen in said passage into said fuel cell stack. Further, the reference does not teach that the pressurized gas is provided from a burp valve provided in an anode exhaust passage of the fuel cell stack. Luken does teach that an oxygen containing oxidant, such as oxygen or air is introduced through the electrode (col. 5, lines 35-60. Van Dine teaches (col. 7, line 54-col 8, end) that pressurized air from a blower is used to purge the cathode and anode (col. 9, lines 23+.) A variety of valves are used to introduce and remove gasses from the fuel cell. It would have been obvious to one of ordinary skill in the art at the time the invention was made to releasing a pressurized gas into a passage upstream of the cathode inlet for forcing oxygen in said passage into said fuel cell stack. One of ordinary skill would understand that the ambient air around the electrode would be consumed through the noted reactions and that flowing the air would be necessary to all for the

system to function. Releasing a pressurized gas from the compressor or the flow paths of the system would be an obvious choice to flow oxidant to and across the catalytic electrode in order for the fuel cell to function. Provided air pressure from a burp valve in an anode exhaust passage would be an obvious means from limited flow choices in the fuel cell. The artesian would have found the claimed invention to be obvious in light of the teachings of the references.

Response to Arguments

Applicant's arguments filed 12/7/2007 have been fully considered but they are not fully persuasive. The new rejection is noted based on applicant's amendments to the claims.

Applicant argues, "Luken does not envisage "gradually increasing said electrical load on the fuel cell stack over time while using said increased electrical power generated to drive the compressor to supply additional oxygen to the cathode inlet" as described in Applicant's amended claim 1. The Luken reference clearly requires an auxiliary fuel cell stack to generate the necessary power for driving the compressor supplying oxidant to the primary fuel cell stack and does not contemplate a single, self-powering fuel cell stack." This argument is not persuasive. In claim 2, Luken teaches that the fuel cell controller senses a first electrical power generation level from the primary fuel cell stack and increases the oxidant feed rate in response to the power generation. Claim 3 teaches that the controller supplies electric power from the primary and auxiliary fuel cells to the compressor based on an increase in reactants. The Luken reference teaches the method as claimed. While different embodiments taught in the reference may include an auxiliary fuel cell, the instant claims do not include language that prevents this embodiment or method from reading upon the claimed invention. The claims are to a method

that includes the steps of introducing hydrogen to the anode inlet of the fuel cell stack; applying an electrical load to the fuel cell stack via the compressor for supplying additional oxygen to the cathode inlet; gradually increasing the electrical load to the fuel stack over time while using the increased electrical load to drive the compressor to supply additional oxygen to the cathode inlet. Each of these steps is taught in the prior art.

Examiner Correspondence

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Mark Ruthkosky whose telephone number is 571-272-1291. The examiner can normally be reached on FLEX schedule (generally, Monday-Thursday from 9:00-6:30.) If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Patrick Ryan can be reached at 571-272-1292. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free.)

/Mark Ruthkosky/

Primary Examiner, Art Unit 1795